"At p. 189, Vol. VII, is found the probable error $x = \sqrt{[S(d_1^2) \div n]} \times \tan \frac{1}{2} \tan^{-1} cl = 707\sqrt{(S(d_1^2) \div n}$, where $S(d_1^2)$ is the sum of the squares of the errors, and , their number.

In the first case of 374, all possible errors, without regard to sign, are included between 0 and 0.5 of the last decimal place, their number is infinite, there is no greater density or accumulation of errors of one value between these limits than of another; therefore

$$\frac{S(d_1^2)}{n} = \int_0^{0.5} y^2 dy \div y = \tfrac{1}{3}y^2 + C = \tfrac{1}{12}.$$

Hence the probable error $x = \frac{1}{12}\sqrt{6} = 0.204$, instead of 0.25.

R. J. Adcock."

PROBLEMS.

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375. *By W. B. Bates.*—A and B enter into partnership and gain \$200. Now six times A's accumulated stock (capital and profit) equals five times B's original stock, and six times B's profit exceeds A's original stock by \$200. Required the original stock of each.

376. *By Dr. H. Eggers.* — Divide a right angle into three parts, such that the tangents of the several angles are proportional to three given numbers.

377. *By W. E. Heal.*—If the equations,

$$x^2 + a x + b = 0$$
$$x^2 + a_1 x + b_1 = 0,$$

have a common root, find the remaining roots.

378. *By Isaac H. Turrell.*— O is the center of a circle circumscribing a triangle, and a, b, c, are the middle points of the sides opposite the angles A, B, C, respectively. If a circle be drawn through A to touch Ob, Oc, and another through B to touch Oa, Oc, prove that their common tangent passes through C.

379. *By Paul Peltier, A. M., Waterloo, Ill.*—If any number of circles touch one another in one point, all their polars which correspond to a common pole, pass through a single point.

380. *By Lieut. Chas. A. Stone, U. S. Naval Acad., Ann., Md.* — Find the equation of the curve in which the tangent of the angle which the tangent line makes with the axis of X, increases proportionally to the length of the curve.

381. *By Prof. W. P. Casey.* — To find a point in a given line so that the rectangle contained by two lines drawn to it from two given points may be given or a minimum (without the aid of the Cassinian Ovals).

382. *By Thomas Spencer.* — Prove in general that the chord drawn though a given point so as to cut off the minimum area from a given curve is bisected at that point.

383.—*By Prof. Edmunds* —Solve and discuss:

$$\begin{cases} x^2 + y^2 = a^2, \\ \log x + \log y = n. \end{cases}$$

384. *By Prof. Asaph Hall.*—"Show that

$$\int_0^a dx \int_0^x \varphi(x, y) . dy = \int_0^a dy \int_y^a \varphi(x, y) dx.$$

(Dirichlet's theorem.)"

385. *Selected by Prof. H. T. Eddy.*—Show that

$$\int_{-\infty}^{+\infty} \varepsilon^{\left(-\,{}^2\cos 2\theta + \frac{a^2}{2x^2}\sin 2\theta\right)} \begin{matrix}\cos\\ \sin\end{matrix}\left[x^2 \sin 2\theta + \frac{a^2}{2x^2}\cos 2\theta \right] dx$$

$$= \pi^{\frac{1}{2}} \varepsilon^{-a} \begin{matrix}\cos\\ \sin\end{matrix}\left[\theta + a \right].$$

386. *By George Eastwood.*—Integrate the equation

$$\frac{d^2\phi}{dt^2} \cdot \frac{d^2\phi}{dx^2} - \left(\frac{d\phi}{dt} \cdot \frac{d\phi}{dx}\right)^2 = 0.$$

PUBLICATIONS RECEIVED.

On Gauss's Method of Computing Secular Perturbations with an Application to the action of Venus on Mercury, by GEORGE W. HILL, Assistant American Ephemeris. 4to. 1881.

The Stophoids, by WILLIAM WOOLSEY JOHNSON. Reprinted from the American Journal of Mathematics, Vol. III.

Solution of a Geometrical Problem, by PROF. E. B. SEITZ. Reprinted from the Mathematical Visitor, Vol. II, No. 1.

ERRATA.

On page 5, line 7, for a, b, c and d under the radicals, read a^5, b^5, c^5, d^5.
" " 8, " 6 from bottom, for presumptious, read presumptuous.
" " 12, lines 6 and 22, for x', read x_1.
" " 16, " 16, for 2γ, read $2r$.
" " 20, line 18, for by, read into.
" " 21, " 11, from bottom, for twice, read four times.